

**WHAT IS CLAIMED IS:**

- 5                   1.       An imageable composition comprising:  
an acid curable composition;  
an acid generator; and  
a strong acid.
- 10                   2.       The composition of claim 1, wherein said acid curable  
composition comprises:  
a binder; and  
a crosslinking agent for said binder.
- 15                   3.       The composition of claim 2, wherein said binder comprises a  
polymer having at least two reactive groups each independently selected  
from the group consisting of: hydroxy, carboxylic acid, amine, carbamate,  
amide, sulfonamide and imide.
- 20                   4.       The composition of claim 3, wherein said reactive group in  
said polymer is a hydroxy group.
- 25                   5.       The composition of claim 4, wherein said polymer is selected  
from the group consisting of: a polyol, a polyether polyol, a novolak resin,  
a resole resin, a hydroxyfunctional acrylic resin, a hydroxyfunctional  
polyester resin and combination thereof.
6.       The composition of claim 2, wherein said binder is a novolak  
resin.
- 30                   7.       The composition of claim 2, wherein said crosslinking agent  
is selected from the group consisting of: a resole resin, an amino resin, an

amido resin, an epoxy compound having at least two epoxide groups and a combination thereof.

8. The composition of claim 7, wherein said crosslinking agent is resole resin.

9. The composition of claim 8, wherein said binder is a novolak resin.

10. The composition of claim 7, wherein said crosslinking agent is an amino resin having at least two alkoxymethyl groups.

11. The composition of claim 10, wherein said amino resin is selected from the group consisting of: an alkoxymethylated melamine resin, an alkoxymethylated benzoguanamine resin, an alkoxymethylated glycoluril, an alkoxymethylated polyacrylamid, an alkoxymethylated polymethacrylamid and a combination thereof.

12. The composition of claim 11, wherein said amino resin is an alkoxymethylated melamine resin having from about 2 to about 6 methoxymethyl groups.

13. The composition of claim 2, further comprising an isocyanate crosslinker having at least two isocyanate groups.

14. The composition of claim 1, wherein said acid generator is an ultraviolet, visible or infrared radiation or heat activated compound.

15. The composition of claim 14, wherein said an acid generator is selected from the group consisting of: an onium salt, a covalently bound

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11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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sulfonate group containing compound, hydrocarbylsulfonamido-N-hydrocarbyl sulfonate and a combination thereof.

5 16. The composition of claim 15, wherein said acid generator is an onium salt.

17. The composition of claim 16, wherein said onium salt has a non-nucleophilic counteranion selected from the group consisting of: tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate,  
10 hexafluoroantimonate, triflate, tetrakis(pentafluorophenyl)borate, pentafluoroethyl sulfonate, p-methylbenzene sulfonate, ethyl sulfonate, trifluoromethyl acetate and pentafluoroethyl acetate.

18. The composition of claim 16, wherein said onium salt is  
15 selected from the group consisting of: an iodonium salt, a sulfonium salt, a hydrocarbyloxysulfonium salt, a hydrocarbyloxyammonium salt, an aryl diazonium salt and a combination thereof.

19. The composition of claim 18 wherein said  
20 hydrocarbyloxyammonium salt is a salt of an N-hydrocarbyloxy substituted nitrogen containing heterocyclic compound.

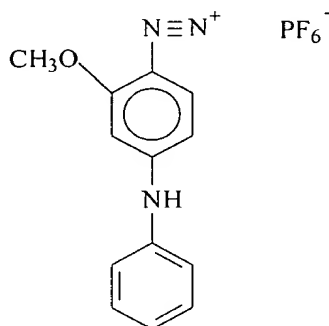
20. The composition of claim 19 wherein said N-hydrocarbyloxy substituted nitrogen containing heterocyclic compound is N-  
25 ethoxyisoquinolinium hexafluorophosphate.

21. The composition of claim 18, wherein said iodonium salt is 4-octyloxyphenyl phenyliodonium hexafluoroantimonate.

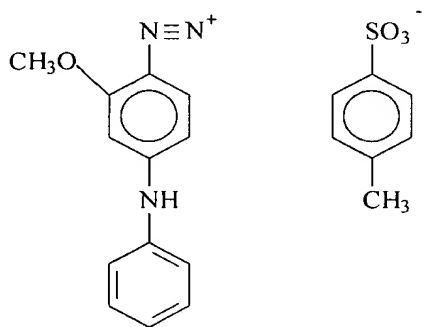
22. The composition of claim 18, wherein said acid generator is  
30 a monomeric or oligomeric aromatic diazonium salt.

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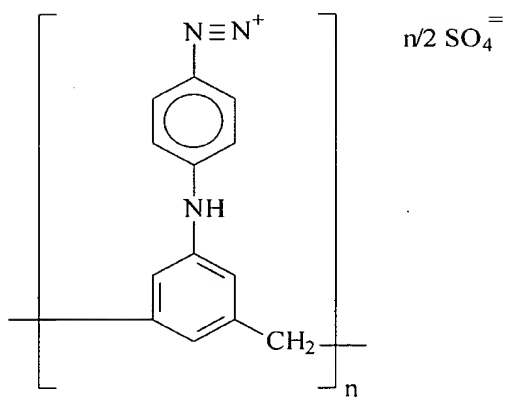
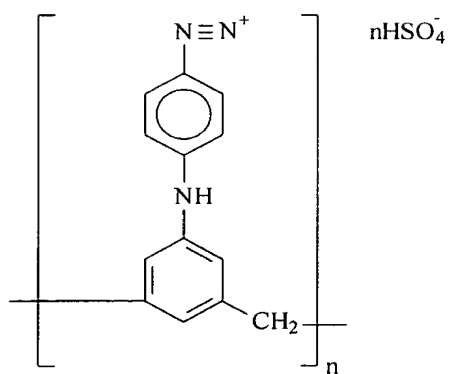
23. The composition of claim 22, wherein said diazonium salt is selected from the group consisting of: 2-methoxy-4-phenylaminobenzene diazonium hexafluorophosphate (diazo MSPF6) represented by the
- 5 formula:



- 2-methoxy-4-phenylaminobenzenediazonium p-toluenesulfonate
- 10 represented by the formula:

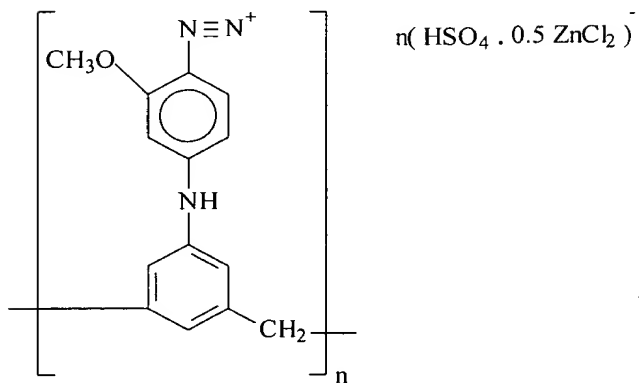


an oligomeric diazonium salt selected from the group consisting of compounds represented by the formula:



5

and



wherein n is from 1 to 11; and a combination of any of the aforementioned compounds.

24. The composition of claim 1, wherein said strong acid is an acid having a pKa of not more than about 8.

25. The composition of claim 1, wherein said strong acid is an acid having a pKa of not more than about 4.

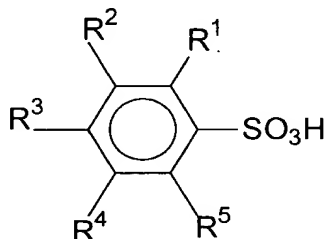
26. The composition of claim 24, wherein said strong acid is a sulfonic acid represented by the formula:



wherein R is selected from the group consisting of: a substituted or unsubstituted hydrocarbyl of 1 to 22 carbon atoms, a substituted or unsubstituted aryl of 6 to 22 carbon atoms and a mixture thereof.

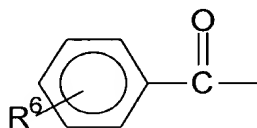
27. The composition of claim 26, wherein R is selected from the group consisting of: linear, branched or cyclic alkyl of 1 to 22 carbon atom, linear, branched or cyclic haloalkyl of 1 to 22 carbon atom having at least one halogen and a mixture thereof.

28. The composition of claim 26, wherein said sulfonic acid is an aryl sulfonic acid represented by the formula:



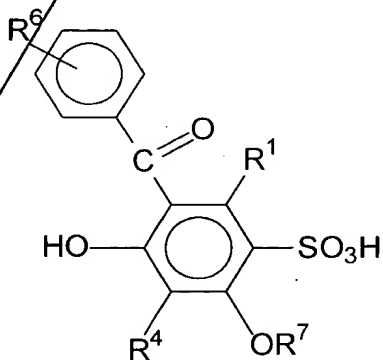
wherein each of  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$  is independently selected from the group consisting of: hydrogen, alkyl of 1 to 12 carbon atoms, haloalkyl of 1 to 22 carbon atoms having at least one halogen, aryl of 6 to 12 carbon atoms, halogen, hydroxy, alkoxy, cyano, nitro, alkoxycarbonyl and acyl.

29. The composition of claim 28, wherein said acyl is represented by the formula:



wherein  $R^6$  is selected from the group consisting of: hydrogen, alkyl of 1 to 12 carbon atoms, haloalkyl of 1 to 12 carbon atoms having at least one halogen, alkoxy, cyano, nitro, alkoxycarbonyl and acetyl

30. The composition of claim 28, wherein said aryl sulfonic acid is represented by the formula:



wherein each of R<sup>1</sup>, R<sup>4</sup> and R<sup>6</sup> is independently selected from the group consisting of: hydrogen, alkyl of 1 to 12 carbon atoms, haloalkyl of 1 to 12 carbon atoms having at least one halogen, aryl of 6 to 12 carbon atoms, halogen, hydroxy, alkoxy, cyano, nitro, alkoxycarbonyl and acyl and wherein R<sup>7</sup> is selected from the group consisting of: hydrogen, alkyl of 1 to 12 carbon atoms, haloalkyl of 1 to 12 carbon atoms having at least one halogen, aryl of 6 to 12 carbon atoms, alkoxycarbonyl and acyl.

31. The composition of claim 30, wherein said aryl sulfonic acid is 3-benzoyl-4-hydroxy-6-methoxybenzenesulfonic acid.

32. The composition of claim 1, further comprising a photothermal converter material.

33. The composition of claim 1, further comprising an infrared absorber.

34. The composition of claim 33, wherein said infrared absorber is selected from the group consisting of: a pigment, a dye and a combination thereof.

35. The composition of claim 34, wherein said pigment is selected from the group consisting of: black pigments, yellow pigments, orange pigments, brown pigments, red pigments, purple pigments, blue pigments, green pigments, fluorescent pigments, metal powder pigments, polymer bond pigments, insoluble azo pigments, azo lake pigments, condensation azo pigments, chelate azo pigment, phthalocyanine pigments, anthraquinone pigments, perylene pigments, perynone pigments, thioindigo pigments, quinacridone pigments, dioxazine pigments, isoindolinone pigments, quinophthalone pigments, colored lake pigments, azine pigments, nitroso pigments, nitro pigments, natural



pigments, fluorescent pigments, inorganic pigments, carbon black, Paris Blue, Prussian Blue and a combination thereof.

36. The composition of claim 34, wherein said infrared absorber  
5 is a dye selected from the group consisting of: cyanine dyes, squarylium dyes, pyrylium salts and nickel thiolate complexes.

37. An imageable element comprising:  
a substrate; and  
10 an imageable composition coated on a surface of said substrate, said composition comprising: an acid curable composition; an acid generator; and a strong acid.

38. The imageable element of claim 37, wherein said thermally  
15 imageable composition further comprises an infrared absorber.

39. The imageable element of claim 37, wherein said thermally  
imageable composition comprises a photothermal converting material.

40. A method of producing an imaged element comprising the  
20 steps of:

providing a thermally imageable element comprising a substrate  
and a thermally imageable composition coated on a surface of said  
substrate, said composition comprising an acid curable composition, an  
25 acid generator and a strong acid;

imagewise exposing said imageable element to heat with a hot  
stylus to produce an imagewise exposed element having exposed and  
unexposed regions;

baking said imagewise exposed element at a temperature and  
30 period of time sufficient to produce a cured element; and

contacting said cured element and a developer to remove the unexposed regions and thereby produce said imaged element.

5 41. A method of producing an imaged element comprising the steps of:

providing an imageable element comprising a substrate and an imageable composition coated on a surface of said substrate, said composition comprising an acid curable composition, an acid generator and a strong acid;

10 imagewise exposing said imageable element to radiation to produce an imagewise exposed element having exposed and unexposed regions;

baking said imagewise exposed element at a temperature and period of time sufficient to produce a cured element; and

15 contacting said cured element and a developer to remove the unexposed regions and thereby produce said imaged element.

20 42. The method of claim 41, wherein said thermally imageable composition further comprises an infrared absorber

43. The method of claim 41, wherein said thermally imageable composition comprises a photothermal converting material.

25 44. The method of claim 41, wherein said exposing step is carried out using an infrared laser.

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